Quiz notes July 13

37. 1. What is the purpose of an experiment?

**To explore cause and effect relationships**

2. How can researchers ensure that there are no biases in the assignment of

participants?

**By assigning participants to groups randomly**

3. In a diagram for an experimental design, the symbol “O” stands for?

**Observation/Pretest or Posttest**

4. In a diagram for an experimental design, the symbol “X” stands for?

**Experimental treatment**

5. What is the name of the potential problem caused by the pretest in the

pretest-posttest randomized control group design?

**Pretest sensitization**

6. What is the name of the true experimental design that has no pretests?

**Posttest only randomized control group design**

7. What is a potential drawback to the Solomon randomized four-group

design?

**Needs a reasonably large pool of participants**

8. True experimental designs are easy to spot because they are all

characterized by what?

**Random assignment to treatment**

38. 1. What is the threat that indicates that taking a pretest may affect

performance on a posttest?

**testing**

2. Suppose an experimental group is being taught letters of the alphabet as a

treatment. At about the same time, the students are watching an educational

program on television, from which they learn the names of the letters. What

is the name of the threat that this problem illustrates?

**History**

3. If observers are more tired and less astute when making posttest

observations than when making pretest observations, what threat is

operating?

**Instrumentation**

4. What is the name of the threat posed by nonrandom assignment of

participants to experimental and control groups?

**Selection**

5. If infants naturally improve in visual acuity and thus perform better at the

end of an experiment than at the beginning, what threat is operating?

**Maturity**

6. Under what circumstance will statistical regression operate?

**If participants are chosen based on their extreme scores**

7. How can researchers overcome all the threats to internal validity?

**Using true experimental design**

39. 1. Which type of validity deals with the question of whether a researcher can

generalize with confidence to a larger population in a natural setting?

**external validity**

2. Which type of validity deals with whether the treatment is directly

responsible for any changes observed in the experimental setting?

**Threats to external validity**

3. What is the name of the threat that warns researchers to be careful in

generalizing the results to a population when an experiment is conducted on

a nonrandom sample?

**Selection bias**

4. Suppose a random sample of workers in a factory is exposed to five

different reward systems, with each system being used for one month. What

is the name of the threat that reminds researchers that the results may not

generalize to the population of workers if the population is to be exposed to

only the last reward system tried in the experiments?

**Multiple-treatment interference**

5. Suppose an experimental classroom has research observers present at all

times. What is the name of the threat that reminds researchers that the

results may not generalize to other classrooms without observers?

**Reactive effects of experimental arrangements**

6. If a pretest causes a change in participants’ sensitivity to a treatment, what

threat is operating?

**Reactive effect of testing**

41. 1. What is the name of the design diagrammed immediately below?

O X O

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O O

**Nonequivalent control group design**

2. In the design shown in Question 1, what indicates that the participants

were not assigned at random to the groups?

**The dashed line**

3. If a researcher uses matching to form the two groups in the design in

Question1, would the resulting experiment be superior to a true experiment?

**No**

4. What is a major advantage of the equivalent time-samples design?

**The experimental and control participants are identical in all**

**ways**

5. What is a major disadvantage of the equivalent time-samples design?

**Multiple treatment interference**

6. In psychology, what is an ABAB design?

**A single group design where treatment is alternated**

42. 1. A confound is a source of confusion regarding what?

**The explanation for a given difference**

2. What is the name of the effect that refers to the possibility that the control

group might become aware of its “inferior” status and respond by trying to

outperform the experimental group?

**John Henry effect**

3. What is the formal name of what is characterized as the “attention effect”

in this topic?

**Hawthorne effect**

4. In addition to an experimental and a traditional control group (with no

treatment), what other group can be used to control for the Hawthorne

effect?

**A control group that receives attention**

5. The term “placebo effect” refers to what tendency?

**Individuals to improve because they are being treated**

6. In what type of experiment do neither the participants nor the individuals

dispensing the drug know which is the active drug and which is the placebo?

**Double-blind**

7. A “demand characteristic” is a cue that lets participants know what?

**The expected outcome of the experiment**

47. 1. When researcher study a sample, are the results called the “true results” or

the “observed results”?

**observed results**

2. According to the null hypothesis, what created the difference in Table 1 in

this topic?

**an illusion created by random sampling**

3. What is the name of the test of the null hypothesis use in this topic?

**Chi-squared**

4. According to this topic, should the typical consumer try to interpret the

value of *df*?

**NO**

5. What is the symbol of probability?

***p***

6. If a researcher found that a chi-square test of a difference yielded a p of

less than 5 in 100, on the basis of conventional wisdom, what should the

researcher conclude about the null hypothesis?

**The difference is statistically significant**

7. Does “p < .05” or “p > .05” usually lead a researcher to declare a difference

statistically significant?

**p < .05**

8. If a researcher fails to reject a null hypothesis, is the difference in question

statistically significant?

**No it is statistically insignificant**

9. If a researcher has a statistically significant result, should the null

hypothesis remain on the list of viable explanations for an observed   
difference?

**No**

48. 1. Which type of analysis classifies participants in terms of two variables in

order to examine the relationship between the two variables?

**Bivariate analysis**

2. What decision should researcher make about the null hypothesis if a chi-

square test leads to the conclusion that the observed differences are unlikely

to be due to random errors?

**Reject it**

3. If p = .05 for the chi-square test, chances are how many in 100 that the null

hypothesis is true?

**5**

4. When a researcher uses the .01 level, what are the odds of making a Type I

Error?

**1 in 100**

5. What is the name of the error researchers make when they fail to reject the

null hypothesis when, in fact, it is an incorrect hypothesis?

**Type II Error**

6. What is the name of the error researcher make when they reject the null

hypothesis when, in fact, it is a correct hypothesis?

**Type I Error**

7. Why is random sampling desirable even though it creates errors?

**Because it is free from bias**

53. 1. Pearson r stands for what words?

**Pearson product-moment correlation coefficient**

2. When the relationship between two variables is perfect and inverse, what

is the value of r?

**-1.00**

3. Is it possible for a negative relationship to be strong?

**Yes**

4. Is an r of -.90 stronger than an r of .50?

**Yes**

5. Is an r of .75 stronger than an r of -.35?

**Yes**

6. Is a relationship “direct” or “inverse” when those with high scores on one

variable have high scores on the other and those with low scores on one

variable have low scores on the other?

**Direct**

7. What does an r of 1.00 indicate?

**The direct relationship is perfect**

8. For a Pearson r of .60, what is the value of the coefficient of determination?

**.36**

9. What must be done in order to convert a coefficient of determination into a

percentage?

**Multiply by 100%**

10. A Pearson r of .70 is what percentage better than a Pearson r of 0.00?

**49%**

54. 1. What does the null hypothesis say about the difference between two

sample means?

**There is no true difference between two sample means**

2. Are the values of t and df of any special interest to typical consumers of

research?

**No, they are only mathematical substeps**

3. Suppose you read that t = 2.000, df = 20, p > .05 for the difference between

two means. Using conventional standards, should you conclude that the null

hypothesis should be rejected?

**No**

4. Suppose you read that t = 2.859, df = 40, p < .01 for the difference between

two means. Using conventional standards, should you conclude that the null

hypothesis should be rejected?

**Yes**

5. On the basis of the information in Question 4, should you conclude that the

difference between the means in statistically significant?

**Yes**

6. When a researcher uses a large sample, is he or she “more likely” or “less

likely” to reject the null hypothesis than when a researcher uses a small

sample?

**More likely**

7. When the size of the difference between means is large, is a researcher

“more likely” or “less likely” to reject the null hypothesis than when the size

of the difference is small?

**More likely**

8. If a researcher found that for a sample of 92 participants, r = .41, p < .001,

would the researcher reject the null hypothesis?

**Yes**

9. Is the value of r is Question 8 statistically significant?

**Yes**

55. 1. ANOVA stands for what?

**Analysis of variance**

2. If a researcher compares two means for significance, will ANOVA and the t

test yield the same probability?

**Yes**

3. If an ANOVA yields p < .05, should the null hypothesis be rejected?

**Yes**

4. If an ANOVA yields p > .05, is/are the differences statistically significant?

**No**

5. If a researcher has four means on an achievement test for samples of

students in four states, can he or she determine whether the set of

differences, overall, is statistically significant by using a t test? Explain.

**No t test only compares two means.**

6. For the information in Question 5, could a researcher use an ANOVA for

the same purpose?

**Yes an ANOVA can be used for two or more means**

7. Should the typical consumer of research be concerned with the values of

the degrees of freedom?

**No**

8. In an ANOVA table, which statistic is of greatest interest to the typical

consumer of research?

**p/probability**

9. If an overall ANOVA for three or more means is significant, it can be

followed by what type of test to determine the significance of the differences

among the individual pairs of means?

**Multiple comparisons test**

56. 1. Suppose a researcher drew random samples of urban, suburban, and rural

children, tested them for creativity, and obtained three means. Should the

researcher use a “one-way” or a “two-way” ANOVA to test for significance?

Explain.

**One-way, there is no second variable being tested**

2. Do the following means on a performance test indicate an interaction

between type of reward and age?

Age level Praise Reward Monetary Reward **Row Mean**

Young Adults M = 50.00 M = 60.00 **M = 55.00**

Older Adults M = 60.00 M = 50.00 **M = 55.00**

**Col. Mean M = 55.00 M = 55.00**

**Younger adults respond better to monetary rewards where older**

**adults respond better to praise**

3. Do the means for Question 2 indicate a main effect for type of reward?

**No main effect for age**

4. Do the following means on an achievement test indicate an interaction

between the method of instruction (A vs. B) and the aptitude of the students

(high vs. low)?

Aptitude Method A Method B **Row Mean**

High Aptitude M = 100.00 M = 85.00 **M = 92.50**

Low Aptitude M = 100.00 M = 85.00 **M = 92.50**

**Col. Mean M = 100.00 M = 85.00**

**No, it doesn’t rely on high or low aptitude, just Method A is better**

5. Do the means for Question 4 indicate a main effect for method of

instruction?

**In general Method A is better overall**

6. Do the means for Question 4 indicate a main effect for aptitude?

**No**

7. If p > .05 for an interaction in an analysis of variance, should the

researcher reject the null hypothesis?

**No**

57. 1. Is it possible for a small difference to be statistically significant?

**Yes**

2. This topic describes how many types of considerations for determining

practical significance?

**Five**

3. If the cost is very low, might a very small statistically significant difference

be of practical significance?

**Yes**

4. Does a crucial difference need to be numerically large to be of practical

significance?

**No**

5. According to this topic, should the acceptability of a treatment to the

clients be considered when determining practical significance?

**Yes**

6. According to this topic, ethical consideration should play no role in the

interpretation of the results of a study. Is this statement true or false?

**False**

7. Should determining the practical significance of a study’s results be a

mechanical process?

**No**